DETAILED ACTION

Response to Amendment

1. In the amendment to the specification applicants wish to add a substitute table; however, they failed to include that table in their amendment.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claim 7 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. It has been held that "[a]ny negative limitation or exclusionary proviso must have basis in the original disclosure." Please see MPEP 2173.05(i). The specification fails to specifically mention the negative limitation of a recording layer "which does not contain silica."

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

> invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitamura et al. (US 2001/0016249) in view of Hiromine (JP 2002-011936).

The Examiner notes that the following product-by-process limitation of the inkjet recording material to be "cast coated" has been incorporated into all of the claims; furthermore, claim 12 seeks to define the urethane resin emulsion in the manner that it was formed. It has been held that "even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior art product was made by a different process." Please see *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985); further, it has been held that "[o]nce the examiner provides a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product." Please see MPEP 2113 and *In re Marosi*, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983).

Kitamura et al. teach an inkjet recording material having excellent color density, clarity, water-resistance, and high surface smoothness and gloss [0030] and [0031]. They further teach an "ink jet recording medium…at least one ink receiving layer of the

image-recording stratum further comprises…the binder and the fine pigment particle of at least one pigment selected from the group consisting of…γ-aluminas and having an average particle size of 1 μm" [0164] and [0090]. They teach at [0107] that the recording strata or stratum may be constituted of alumina compound alone. Additionally, they teach at [0130] that there may be multiple pigments contained in the recording strata. Kitamura et al. further teach that the support may be made of "wood pulp include[ing] mechanical pulps, chemical pulps, and re-used paper pulps" [0131]. They specifically mention that the substrate may be made of liquid-absorbing substrates at [0131] to [0133] and also in Substrate Sheet A at [0213] and Substrate Sheet A-II [0366]. In light of applicants' specification (page 4, lines 21-25), it is clear that these substrates would intrinsically have air permeability as presently claimed. Kitamura et al. also teach that these substrates may be made from cast coated methods [0455] and [0477].

They further teach at [0143] that the binders mentioned (water-soluble and water-dispersible) may be used alone or in mixture of two or more. They also teach the "binder preferably comprises at least one member selected from the group consisting of…water-dispersible polyurethane resins" [0178]; furthermore, they teach the water-soluble "binder preferably comprises at least one member selected from the group consisting of polyvinyl alcohol" [0179]. Kitamura et al. also teach at [0111] to [0113] and [0127] that cationic resins may be used in the recording stratum from an amount of 1 to 40 parts by weight, and when used with a binder 1 to 30 parts by weight per 100 parts by weight of pigment.

Kitamura et al. fails to teach using a cationic polyester/polyurethane resin in the binder layer, nor does it teach the cationic degree of the urethane resin, a glass transition temperature of 10-50°C, and image clarity of 20% or greater, or a contact angle of 50° or less relative to water.

Hiromine teaches a "cation mold polyurethane resin of an ester system," which has "40 degrees C or less of [a] glass transition temperature" [0013].

Since Hiromine and Kitamura et al. are both drawn to formation of inkjet recording media using cationic polyurethane resins to prevent curl and provide good lightfastness; it would have been obvious to one having ordinary skill in the art at the time the invention was made to make the simple substitution of the known cationic polyurethane resin of Hiromine for the cationic resin compound of Kitamura et al. The results of this substitution would have been predictable to one having ordinary skill, and therefore render obvious applicants' claims 1, 4-7, and 11-14.

In regards to claims 2 and 3, it is well known in the art to manufacture inkjet recording media having, for example, acceptable brightness, whiteness, opacity, holdout, and an appropriate finish; therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adjust the cationic degree of the cationic polyester/polyurethane resin to achieve a recording medium having the appropriate contact angle with respect to water. This would allow the inkjet ink to bead properly and result in an image that possessed the proper image clarity according to applicants. It is also well known to anyone within the art to treat inkjet recording media

in such a way as to arrive at the appropriate amount of gloss needed for the desired product.

With regards to claims 6 and 8, the particle size distribution mentioned by applicants in their claim 6 directly influences the amount of gloss and ink uptake of the recording media, and the average particle diameter would have the same influence; therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to vary the particle size distribution and average particle diameter to arrive at a product comprising the desired gloss and ink uptake for applicants' intended use.

With respect to claim 7, although Kitamura et al. discloses the use of silica, it is not required.

With respect to claims 9 and 10, the surface areas of the alumina are disclosed at [0090] including 50 to 300 m^2/g.

With respect to claims 15-17, Kitamura et al. disclose at [0164], [0165], [0169], and [0171] the ability to use "at least one" of boric acid and borate salts, including all the borates of applicants' claim 17 [0171]. The Examiner deems that the language "at least one" teaches the ability to use both boric acid and borates together. Having established that it would be obvious to use a combination of borates and boric acid it would further be obvious to one having ordinary skill in the art at the time the invention was made to experimentally optimize the ratio of borates to boric acid cross-linkers to arrive at a combination that would allow the binder to solidify in an appropriate manner.

With regard to applicants' claims 18, Kitamura et al. disclose a releasing agent,

lecithin in their "Coating liquid II-(17)." This releasing agent is heated by a "casting drum at a peripheral surface temperature of 85 °C," which allows the layer to be more easily peeled from the casting drum [0477-8].

With regard to claim 19, Kitamura et al. fail to teach a releasing agent with a melting point of 90-150 °C; however, there are numerous releasing agents available in the art that melt at certain temperatures; therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to choose an appropriate releasing agent for the claimed medium such that the releasing agent would melt in the same range of temperatures as was needed for applicants' process.

6. Claims 16 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitamura et al. (US 2001/0016249) in view of Hiromine (JP 2002-011936), as applied to claims 15 and 19, respectively, further in view of Yoshida et al. (JP2002-283697).

Kitamura et al. in view of Hiromine renders obvious all of the abovementioned claims; however, they fail to render obvious a recording layer containing a borate/boric acid ratio of 0.25/1 to 2/1.

Yoshida et al. (JP2002-283697) disclose using a solution of "way acid chloride and a way acid" in a ratio of 0.25/1 - 2/1 [0014]. Judging by the US patent family equivalent of these documents, which does not fall under the auspices of prior art, by "way acid" Yoshida et al. mean boric acid. Since Kitamura et al., Hiromine, and Yoshida et al. are all drawn to forming inkjet recording material with even gloss; it would have

been obvious to one having ordinary skill in the art at the time the invention was made to alter the invention as shown in Kitamura et al. to include boric acid and a borate salt in a specific ratio as presented by Yoshida et al.

With regard to applicants' claim 19, Kitamura et al. as described above (section 6) disclose a releasing agent, lecithin in their "Coating liquid II-(17)." This releasing agent is heated by a "casting drum at a peripheral surface temperature of 85 °C," which allows the layer to be more easily peeled from the casting drum [0477-8]; however, Kitamura et al. fail to teach a releasing agent with a melting point of 90-150 °C.

Yoshida et al. disclose using a remover in the recording layer that has a melting point of 90-150 °C [0016]; furthermore, there are numerous releasing agents available in the art that melt at certain temperatures. It would have been obvious to one having ordinary skill in the art at the time the invention was made to make a simple substitution of the known releasing agent in Kitamura et al. for another as shown by Yoshida et al., the predictable result being the invention as claimed in applicants' claim 19.

Applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

7. Claims 1-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitamura et al. (US 2001/0016249) in view of Hiromine (JP 2002-011936), Riou et al. (4,877,686), and Kono et al. (JP S62-095285).

All the limitations of Kitamura et al. have been discussed prior in section 6 above. Additionally, the substitution of cationic urethane resin emulsion having a glass transition temperature of 10-50°C from Hiromine has been discussed in section 6 above; however, Kitamura et al. fail to teach forming the recording medium by way of a cast coating method, wherein the crosslinking agent is added in a coating solution from the binder.

Riou et al. teach that gelling agent, in this case boric acid or a borate, may be placed on the base material prior to coating the binder and pigment (col. 4, lines 40-48).

Since Riou et al. and Kitamura et al. are both drawn to the preparation of inkjet recording media, it would have been obvious to one having ordinary skill in the art at the time the invention was made to vary the way in which the binder and crosslinking agent are added to the paper substrate. The results of the known improvement of Riou et al. on the base device of Kitamura et al. would have been predictable to one having ordinary skill in the art of papermaking. The important improvement technique is the addition of the gelling agent as a separate solution in order to prevent the binder from solidifying prior to the appropriate time. With respect to the fact that Riou et al. adds the crosslinker first before the binder and pigment, it has been held that "selection of any order of performing process steps is *prima facie* obvious in the absence of new or unexpected results." Please see MPEP 2144.04, *Ex parte Rubin*, 128 USPQ 440 (Bd. App. 1959), See also *In re Burhans*, 154 F.2d 690, 69 USPQ 330 (CCPA 1946), and *In re Gibson*, 39 F.2d 975, 5 USPQ 230 (CCPA 1930). The Examiner deems that it is the

separate steps of adding crosslinker and binder that are important, not the order in which they are added.

With regard to the limitation of cast coating inkjet recording media, Kono et al. teach that cast coating has been known in the art to improve the glossiness of paper (English Abstract).

Since Kono et al. and Kitamura et al. are both drawn to inkjet recording media, it would have been obvious to one having ordinary skill in the art at the time the invention was made to apply the known improvement method of cast coating of Kono et al. on the base compositions of Kitamura et al. The results of such an improvement would have been predictable to one having ordinary skill in the art of papermaking.

With respect to claims 2-19 please see section 6 above for a detailed explanation of how Kitamura et al. teach or render obvious all of the other claims.

Response to Arguments

8. Applicant's arguments, see sections concerning Information Disclosure Statement and Rejection under 35 USC 112, second paragraph, filed 12/05/2007, have been fully considered and are persuasive. The relevant objection and rejection of the IDS and claim 4, respectively, have been withdrawn.

9. Applicant's arguments filed 12/05/2007 have been fully considered but they are not persuasive. Applicants argue that Kitamura et al. teach away from cast coated paper; however, the Examiner specifically points to [0455] and [0477] where the paper

of Kitamura et al. is made by cast coating. Additionally, the Examiner points out in section 5 the specific sections of Kitamura et al. where the air and liquid permeable substrates are used; further, the Examiner points our that the "at least one of" language denotes that more than one binder comprising both a polyvinyl alcohol and polyurethane resin may be used.

In response to applicant's argument that JP '936 is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, the use of silica and alumina in recording layers of inkjet recording media is well known in the art; furthermore, the use of cationic urethane resins is known in recording layers comprising either silica or alumina as seen in Kitamura et al. The Examiner respectfully disagrees with applicants, and maintains that one of ordinary skill would have been completely capable to modify the binder to comprise a cationic polyurethane resin with a glass transition temperature of 10-50 °C with a reasonable expectation of success.

Even having said all this, the Examiner has made a new grounds of rejection as seen in section 8 above, wherein the cast coating method is accounted for in addition to the requirement that the binder/pigment coating solution and the crosslinker treatment solution are coated in separate steps.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Please see PTO-892.

Additionally, the X references cited on the international search report, JP 2000-211248 and JP 2000-141868 are considered cumulative to the prior art cited above.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GERARD T. HIGGINS whose telephone number is (571)270-3467. The examiner can normally be reached on M-F 7:30am-5pm est. (1st Friday off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Callie Shosho can be reached on 571-272-1123. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Gerard T Higgins, Ph.D.

Examiner
Art Unit 1794

/Gerard T Higgins, Ph.D./
Examiner, Art Unit 1794